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Phage for Thought: Investigating the Ingestion and Assimilation of Viruses into Rotifer (*Brachionus Plicatilis*) Tissues

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Poster Presentation P34

**PHAGE FOR THOUGHT: INVESTIGATING THE INGESTION AND
ASSIMILATION OF VIRUSES INTO ROTIFER
(*BRACHIONUS PLICATILIS*) TISSUES**

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Rotifers are a group of suspension-feeding aquatic invertebrate animals that range from approximately 50–2,000 micrometers in size. The typical food sources for rotifers (i.e., unicellular algae, 2-10 micrometers in diameter) are visible with light microscopy. Bacteriophages (viruses that use bacteria as hosts) are too small (30-110 nanometers in diameter) to be seen using light microscopy, but are present in great abundance ($\sim 10^{30}$ in the world's oceans). If or how particles as small as bacteriophages are consumed as food is incompletely known; Sorenson ('15) reported that rotifers ingest water containing the fluorescently-labeled (Dichlorotriazinylamino fluorescein, DTAF) bacteriophages. We exposed the rotifer *Brachionus plicatilis* to DTAF-labeled bacteriophages [10^8 bacteriophages /mL] for 3-5 hours and monitored the presence and distribution of the label in rotifer tissue using fluorescence and scanning laser confocal microscopy. As expected, the greatest amount of DTAF-fluorescence was detected in the lumen of the stomach, and with increasing distance from the stomach the intensity of the fluorescence decreased. In general, between the stomach lumen and the epithelium of the stomach there was a 50% difference in fluorescence and the lowest fluorescence was detected in the outer body wall. Using confocal microscopy, the fluorescence within the cells of the stomach was detected in circular vesicles suggesting that DTAF-labeled phages were absorbed by endocytosis, while free DTAF was not so localized. These findings suggest that rotifers are ingesting and assimilating nutrients from bacteriophages.

